A STUDY TO ASSESS THE EFFECTIVENESS OF ICE CUBE ON A SPECIFIC ACUPOINT TO REDUCE PAIN BEFORE INTRAMUSCULAR INJECTION AMONG THE CHILDREN IN SELECTED HOSPITAL AT KANYAKUMARI DISTRICT

A DISSERTATION SUBMITTED TO THE TAMILNADU
DR.M.G.R MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILLMENT
FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSING

OCTOBER 2017

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CERTIFICATE

This is to certify that the dissertation entitled **"A Study to Assess the Effectiveness of Ice Cube Application on a Specific Acupoint to Reduce Pain before Intramuscular Injection among the Children in Selected Hospital at Kanyakumari District"** is a bonafide research work done by **Mrs Presila Reyona,** II year M.Sc (N), Global College of Nursing, Nattalam under the guidance of **Mrs. Kavitha Kisho,** M.Sc (N), HOD of Child Health Nursing, Global College of Nursing, Nattalam in partial fulfillment of the requirements for the Degree of Master of Science in Nursing under Tamil Nadu, Dr. M.G.R Medical University.

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Pof. Vijila Berlin, M.Sc., (N)

Date with seal:

Name and Signature of the
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Date :_____ Nattalam

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OCTOBER 2017

DECLARATION

I hereby declare that the present dissertation entitled **"A Study to Assess the Effectiveness of Ice Cube Application on a Specific Acupoint to Reduce Pain before Intramuscular Injection among the Children in Selected Hospital at Kanyakumari District"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Prof. Mrs. Vijila Berlin M.Sc (N),** Child Health Nursing, and **Mrs Kavitha Kisho, M. Sc (N),** HOD, Child Health Nursing, Global College of Nursing, Nattlam. I also declare that the material of this has not found in anyway, the basis for the award of any degree or diploma in this university or any other university.

Mrs. Presila Reyona

Place: Nattalam

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ABSTRACT

Introduction

Pain refers to the unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

Statement

A study to assess the effectiveness of ice cube on a specific acupoint to reduce pain before intramuscular injection among the children at a selected hospital in kanyakumari district.

The Objectives of the study

- To assess the level of pain after Ice cube Application on a specific Acupoint among the control and the experimental group of children.
- To find the effectiveness of Ice cube Application on a specific Acupoint among the control and the experimental group of children.
- To determine the association between selected demographic variables and the level of pain among the control and the experimental group of children.

Research Methodology

An experimental research approach with post test only design was used to achieve the objectives of the study. The present study was conducted at selected hospital in Kanyakumari district with the sample size of 60 children including 30 in control group and 30 in experimental group using systematic random sampling technique. Review of literature and expert guidance laid the foundation to develop

the tools such as demographic performa and FLACC scale. The feasibility of the study and the refinement of the tool were assessed through pilot study. The data collection for the Main Study was done from 03.04.2017 to 04.05.2017.The children in the control group were assessed using FLACC Scale for level of Pain after Intramuscular injection without any intervention. In experimental group, ice cube application was given for a period of thirty seconds before intramuscular injection. At the end of this period, intramuscular injection was given and post assessment of pain was done immediately for one minute by using FLACC scale.

Findings of the Study

The mean and standard deviation of pain levels of children in the control group is Mean=7.36, SD=1.49 and experimental group is Mean =2.9, SD=1.42 respectively. The unpaired 't' value of 11.84 is highly significant at $p<0.05$ level if significance. Thus the hypothesis H_1 was accepted as there is significant difference in the level of pain during intra muscular injection among control and experimental group of children. There was a significant association between area of residence and level of pain with chi square value of 3.28 at $p<0.05$ in control group children. There was also a significant association between the education of the care taker and the level of pain with chi square value of 10.51 at $p<0.05$ the experimental group children. Thus hypothesis H_2 was partially accepted as there is a association between selected demographic variable and the level of pain.

Conclusion

This study inference reveals that ice cube application on specific acupoint before intramuscular injection could reduce pain among children.

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CHAPTER I

INTRODUCTION

"How necessary is teaching a child to bear an inevitable pain is equally necessary to show them to avoid pain by healthy practice"

-Rutherford

Children are the future prospects of this world. To deal with children is an investment for future. The word 'child' comes from the Germanic word child – "child". Also in old English meaning "a youth of gentle birth". Children are amazingly efficient and very enthusiastic towards the environment. In the beginning of child hood, the child begins to interact with others outside the family. During this period, the parents should be lovely caring, stimulating and identifying the needs and confirm the expectation of the society in them. India's total child population between the age group of 0-14 years is 33.3%. Most children undergo painful procedures.

The physical change and development of children is dramatic when compared with other ages. The more frequent caregiver for a child is the mother. They undergo many stresses while taking care of their children. When the child is ill or undergoes any painful procedures, will have anxiety, stress and fears. It is the responsibility of the nurse to give emotional support, guidance and full explanation of the procedure to the parents. The nurse can educate the parents about the procedures and ways of providing care for their children.

Illness and hospitalization expose children to unfamiliar and unpleasant feelings. Since children have little experience and comprehension of pain, it can cause intimidation and anxiety for them. Millions of children undergo procedures, which cause considerable distress. Children requiring needle stick such as injections, IV catheters and blood sampling, view these and blood sampling, view these procedures as frightening and as a significant source of pain.

In children pain is under diagnosed, misunderstood and untreated medical problem..The International Association for Study of Pain (IASP, 1979), defined pain as an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage. The health personnel must have the knowledge and skills to assess pain, to implement pain relief strategies, and to evaluate the effectiveness of these strategies regardless of the settings

Pain in children, and whether children feel pain, has been the subject of debate within the medical profession for centuries. Prior to the late nineteenth century, it was generally considered that children get hurt more easily than adults. It was only in the last quarter of the 20^{th} century, that scientific techniques were finally established children definitely do experience pain, probably more than adults and has developed reliable means of assessing and treating it.

Injections are the most common source of iatrogenic pain in childhood, are administered repeatedly to almost all children throughout infancy, childhood and adolescence. The pain associated with such injections, is a source of distress for children, their parents and for those administering the injections. If not addressed, this pain can lead to pre procedural anxiety in the future, needle fears and health care

avoidance behaviors, including non adherence with vaccination schedules. It is estimated that up to 25% of adults have a fear of needles, with most fears developing in childhood. About 10% of the population avoids vaccination and other needle procedure because of needle fears.

Many people use complementary (sometimes known as alternative) health treatments to go along with the medical care they get from their health care provider. These therapies are called "complementary" therapies because usually they are used alongside the more standard medical care received.

They are sometimes called "alternative" because they don't fit into the mainstream, Western ways of looking at medicine and health care. These therapies may not fit in with what you usually think of as "health care."Some common complementary therapies include; Physical (body) therapies, such as yoga, massage, and acupuncture, Relaxation techniques, such as meditation and visualization, Herbal medicine (from plants). With most complementary therapies, health is looked at from a holistic (or "whole picture") point of view. Human body is considered as one big system. From a holistic viewpoint, whatever physical activity is done by the body will affect the health and well-being.

NEED FOR THE STUDY:

Injections are the most frequently used procedures, with an estimated 12 billion, administered throughout the world, on an annual basis of these 5% or less are for immunization according to WHO and rest are given for curative purpose. The prevalence of injection in European countries was 5.6 – 11.3 injections per persons per year. The lowest annual number of injections was in America, about 1.7-1.9 injections per persons

per year. The prevalence of injections in South East Asia, the annual ranges from 1.7-11.3 injections per persons per year.

In India 77.2% of rural and 80% of urban children are immunized with vaccines annually. The children vaccinated will experience severe to moderate pain. There are many non-pharmacological measures to reduce pain, one of which is ice application at the injection site prior to injection.

Joselin Annabel (2013) conducted an experimental study on effectiveness of ice application, at selected point (LI-4) prior to intra muscular injection in reducing pain among 60 children between 15 to 18 months, attending Immunization Clinic, . Ice application was given to children under experimental group for 30seconds prior to intramuscular injection. At the end of this period, intramuscular injection was given and assessment of pain was done immediately for one minute by using observational checklist and FLACC Scale. The study finding revealed that majority (60%) of the children in Experimental group, had mild pain level after ice application. The study findings revealed that there was a highly statistically significant difference, in level of pain among children between experimental and control group at $p<0.001$ level of significance.

Hasanpour, et al. (2003) conducted a comparative study to determine the effects of two non- pharmacological pain management methods for intramuscular injection pain in children. 90 samples were chosen randomly and were divided into 3 groups, the first group received distraction and the second group received cold therapy and the third group received routine care. Oucher scale was used to measure the pain intensity. Average pain intensity in local cold therapy, distraction and the control group was 2.3,

34.3 and 83.3 respectively. The finding of the study shows that cold therapy has a significant effect on pain reduction.

The investigator herself during her student period and clinical experience and daily life has come across many children who were screaming due to pain during injections. This stimulated the researcher to identify the simple, safe and easy method of pain intervention during injection, thus motivated to conduct a study to assess the effectiveness of ice cube application on specific acupoint before intramuscular injection to reduce pain.

STATEMENT OF PROBLEM:

A Study to assess the Effectiveness of Ice cube on a specific Acupoint to reduce pain before Intramuscular Injection among the children in selected hospital at Kanyakumari district.

OBJECTIVES:

1. To assess the level of pain after Ice cube Application on a specific Acupoint among the control and the experimental group of children.
2. To find the effectiveness of Ice cube Application on a specific Acupoint among the control and the experimental group of children.
3. To determine the association between selected demographic variables and the level of pain among the control and the experimental group of children.

HYPOTHESIS:

H_1: There will be a significant difference in the level of pain after ice cube application on a specific acupoint among control and experimental group of children.

H_2: There will be a significant association between selected demographic variable and the level of pain after intra muscular injection in the control and experimental group of children.

OPERATIONAL DEFINITION

Effectiveness

Effectiveness refers to capability of producing a desired result.

In this Study, it refers to the expected and desired change in the level of pain of children after application of ice cubes on acupoint(LI-4) and measured by FLACC Scale.

AcuPoint

Acupoint refers to particular bodily locations according to traditional Chinese medicine pervade the body; a subtle influence or vital energy that is the cause of most physiological process and whose proper balance is necessary for maintaining health.

In this Study, it refers to a healing points, LI-4 located in the dorsal part of hand between thumb and forefinger in the highest part of the muscle.

Ice Cube Application

Ice cube application refers to a small block of artificial ice formed in a mold or cut from a large block applied on the desired body surface.

In this study, it refers to the application of ice cubes in selected site LI-4 Acupoint for a period 30 seconds prior to intra muscular injection in children.

Pain

Pain refers to an unpleasant sensory and emotional experience arising from actual or potential tissue damage.

In this study, it refers to the unpleasant sensory and emotional experience by children during intra muscular injection as measured by FLACC scale.

Children

Children refers to a person of either sex between the time of birth and adolescence.

In this study, it refers to the children age between 4-7 years receiving intra muscular injection at the selected hospitals in Kanyakumari district.

Intra muscular Injection

It refers to a technique used to deliver a medication deep into the muscles.

In this study, it refers to the administration of medicine or immunizing agent through intramuscular route in vastus lateralis muscle of anterior thigh of children.

ASSUMPTIONS:

The Study assumes that

- Children will experience pain during administration of injection.
- Every child is unique and responds in a unique way, to pain.
- Application of ice will reduce pain.

DELIMITATIONS:

The Study is delimited to:

- Both Male and female children between 4 – 7 years of age.
- Receiving only IM injection.

CONCEPTUAL FRAMEWORK:

The conceptual framework deals with the interrelated concepts that are assembled together in some rational scheme by virtue of their relevance to a common place (Polit &Beck, 2016).

Conceptual framework is a whole of interrelated concepts or abstracts that are assembled together in some rational scheme by virtue of their relevance to common theme. A conceptual model provides for logical thinking for systemic observation and interpretation of observed data. It also gives direction for relevant questions on phenomena and points out solution to practical problems a well as serves as a spring board for the generation of hypothesis to be used.

Shirly 1975 states, “The conceptual frame work formalizes the thinking process. So that others may read and know the frame of reference basis to research problem”.

The conceptual frame work which suits the present study is based on General System theory of Ludwig Von Bertalanffy (1968).

According to Luwig Von Bertalanffy, a system is composed of a set of interactive elements and gets each system distinct from environment in which it exists. In all system activities can be resolved into an aggregation of feedback circuits such as input, throughput and output. The feedback circuits helps in maintenance of an intact system.

Present study aims at evaluating the effectiveness of ice cube on a specific acupoint to reduce pain before intramuscular injection among children. Conceptual framework of this study which is based on the system model, consists of three phases

Input

In this study input refers to the demographic variable such as age, gender, number of siblings, accompanied care taker and education of the care taker.

Throughput

In this study throughput refers to providing nursing intervention that is ice cube application at acupoint (LI-4) prior to intra muscular injection. Experimental group is exposed to the intervention before administration of intramuscular injection and assess the level of pain by FLACC scale. Control group is allowed hospital routine and assess the level of pain is assessed by using FLACC pain scale.

Output

According to the General system theory output refers to the energy, matter or information that leaves the system. In the present study output is considered as the effectiveness of ice cube in LI-4 before intra muscular injection to reduce pain among children.

Feedback

According to this General system theory feedback refers to the output that is returned to the system and it allows it to monitor itself over time to a steady state known as equilibrium or homeostasis.

For the present study feedback refers to re evaluate the negative outcome in ice cube application on specific acupoint to reduce pain after intramuscular injection among children with selected demographic variables.

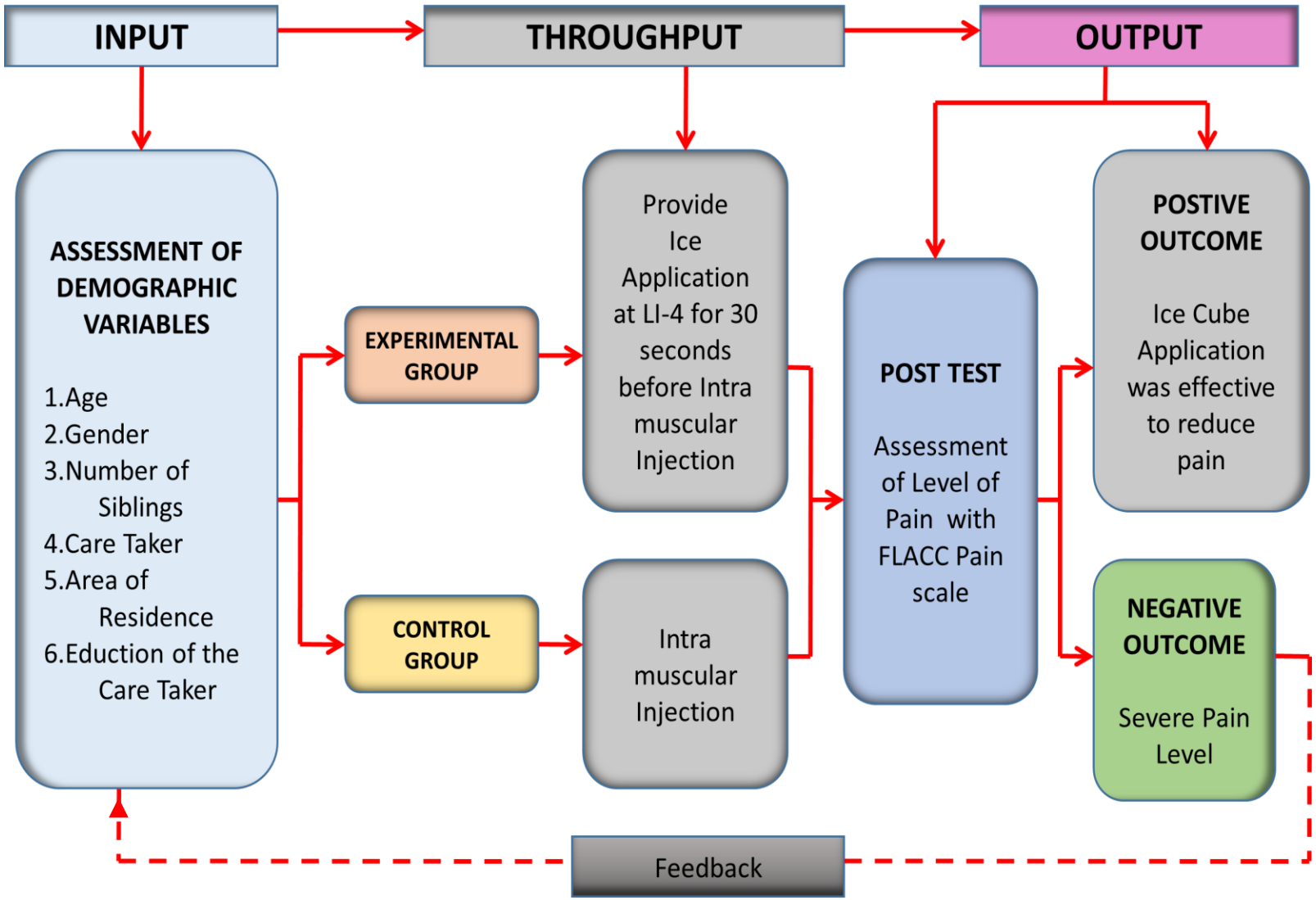

Fig.1: Conceptual Framework Based on Modified General System Theory (Ludwig Von Bertalanffy -1968)

CHAPTER II

REVIEW OF LITERATURE

A literature review involves the systematic identification, location, scrutiny and summary and written materials that contain information on the research problem (Polit & Beck, 2016). The task of reviewing literature involves the identification, selection, critical analysis and reporting of existing information on the topic of interest.

A review acquaints the researcher with what has been done in the field and it minimizes possibilities of unintentional duplications. It justifies the need for replication provides the basis of future investigations and help to relate the findings of one study to another. This chapter deals with a review of published and unpublished research study materials. The review helped the investigator to develop an insight into the problem area.

The review of literature in this chapter is presented under the following headings.

- Studies related to intramuscular injection pain in children
- Studies related to ice cubes to relieve pain in children
- Studies related to specific acupoint to relieve intramuscular injection pain

Literature Related to Intramuscular Pain in Children

Hogan ME (2014) conducted a study to determine the effectiveness of parent-led tactile stimulation to reduce pain during immunization injections. Infants who were from 4 to 6 months were randomized to tactile stimulation by a parent or usual care. Parents in

the tactile stimulation group rubbed the contra lateral thigh distal to the site for 15 seconds before, during, and after injections. One hundred twenty infants participated. Infant characteristics did not differ (P>0.05) between the tactile stimulation and control groups. Mean Modified Behavioral Pain Scale scores and parent visual analogue scale scores did not differ between groups (8.2 [1.1] vs. 8.0 [1.3]; P=0.57) and (60 [20] vs. 53 [22] mm; P=0.10), respectively. The study concluded that Parent-led tactile stimulation did not reduce pain in infants undergoing immunization injections when combined with other pain-relieving interventions. Potential reasons for the lack of effectiveness are discussed. Investigation of the effectiveness of clinician-led tactile stimulation in this population is recommended.

Taddio (2009) conducted a randomized control trial on physical interventions and injection technique for reducing injection pain during childhood immunization. Around 2814children in age group of 0 to 18 years of age were involved in 19 randomized control Trials receiving various kind of vaccination. It concluded that pain during immunization can be decreased by injecting the least painful formulation of vaccine, having the child sit up, stroking the skin or applying pressure close to the injection site and performing a rapid intramuscular injection without aspiration.

Chung (2008) conducted an experimental study to identify that a multidisciplinary approach is necessary to reduce the pain level in children, by using randomized trial on 90 children undergoing painful procedures. The study results recommended that medical and paramedical professionals can use pain management techniques like deep breathing imagery, acupressure and distraction tools. These methods are effective with no side effects.

Keritzer (2008) critically appraised all systematic reviews on the effectiveness of acute procedure related to pain management in hospitalized children. The published systematic reviews and meta analysis of pharmacological and non-pharmacological managements of acute procedure related pain intervention indicated that amethocaine (local surface anesthetic) was superior to EMLA for reducing needle pain and distraction hypothesis was non pharmacological intervention, effective for management of acute procedure related pain in hospitalized children.

Lee (2007) conducted a comparative study to investigate the efficacy of combined transcutaneous acupoint electrical stimuli (TAES) and electromagnetic millimeter wave (EMMW) therapy. It is an additional treatment for pain relief and physical functional activity enhancement among children. In this study he used non blinded design among 47 children with ten sessions of treatment. Results showed the baseline Visual Analogue Scale Score for the intervention and control group were 5.43 and 5.18 respectively at p value < 0.05 level significance. The study results that there is a reduction in pain intensity and stress immediately after the eight sessions of treatment.

Thyr M (2007) did a prospective controlled trial of the effectiveness of glucose to reduce pain during immunization at 3, 5 and 12 months of age. A total of 110 infants were randomized to receive 2ml of 30% glucose or water. Administration of glucose reduced the mean crying time by 22% at 3 months, 62% at 5 months and 52% at 12 months. The difference was significant at 5 and at 12 months. The study concluded that sweet solution can be used as a simple and safe method to reduce the distress following immunization in infants up to 12 months.

Zonna in 2003 shared in article of alternative therapy that non pharmacological therapies are very effective to reduce procedural illness or injury related pain. It includes application of heat or cold or massage to the affected body areas, distraction techniques like toys, games use of deep breathing and relaxation technique.

Literature Related Ice cubes to relieve Pain in children

AAM Attia (2017) conducted a study to evaluate the effectiveness of cyrotherapy in managing the pain at the puncture site among children undergoing hemodialysis. Pre-post quasi experimental research was performed in two dialysis center related to Cairo University among 40 children. Cryotherapy was applied using >3cm pieces of ice bag at the contra lateral site of the aterio venous fistula. Wong Baker Faces Pain Rating Scale was used as assessment for pain. The study concluded that cryotherapy can effectively reduce the venipuncture pain among children with aterio venous fistula undergoing hemodialysis.

Haynes J M (2015) did a randomized controlled trial of ice bag to reduce pain associated with arterial puncture. Plastic ice bag was applied to the wrist for 3 minutes before drawing ABG sample from radial artery. Subject pretreated with ice reported less pain from arterial puncture compared with subjects in the control group (mean visual analog scale 13.8 ± 16.9 vs 25 ± 23mm, P= .01; median visual analog scale 7mm, interquartile range (IQR) 1.5 – 19 vs 20mm, IQR 4.5 – 38.5mm, P=.01). The result shows Ice application before arterial puncture is well tolerated and reduces procedure related pain.

Neethu A M (2015) conducted a quasi experimental study to assess the effectiveness of ice application on injection site in reducing pain among toddlers. The study was conducted at a rural PHC Bangalore among 60 toddlers receiving vaccination and the sample was selected using non probability convenience sampling technique out of which 30 were assigned to experimental and 30 to control group. The study finding showed that in the experimental group, 70% had mild pain score and 305 had no pain whereas in control group 13.3% showed mild pain score 86.7% showed moderate pain scores. It concludes that application of ice was effective in reducing the injection pain among the toddlers.

Navjot Kiran (2013) conducted a quasi experimental study to assess the effectiveness of Ice pack application at the site prior to venipuncture on intensity of pain among children from 3 to 7 years of age. 100 children were selected in randomized sampling technique with 50 subjects each in control and experimental group. It was conducted in a Day care chemotherapy center and pain was assessed in both group by FLACC scale. Result shows statistically reduction in pain during venipuncture in experimental group. It concludes that it is safe, cheap and effective method among children.

Literature Related Ice cube on specific Acupoint to relieve Intramuscular Injection

Abazari Faroukh (2016) conducted a study to assess the effectiveness of hegu point massage(LI-4) with ice on the severity of venipuncture pain in children with thalassemia..This was a double-blind, two group clinical trial .Eighty six Thalassemic children who were eligible to participate in the study were selected from children 6 to 12

years of age group. By using convenience sampling method, samples were allocated..The result show that average pain score in the experimental and placebo group was statistically make a difference in terms of pain severity .Thus the study concludes that ice massage at hegu point is an effective method to relieve the venipuncture pain in children.

Smith (2012) in his article on complimentary therapies, stated that increasingly individuals are turning to complementary therapies, to reduce or cope with chronic pain. Acupressure was one of the oldest complementary therapies, originated from china more than 2500 years ago. It has steadily gained popularity in the United States, over the last few decades, as a modality for pain relief among both practitioners and patients.

Hsieh (2009) conducted a comparative study with the aim, to compare the efficacy of acupressure, with that of physical therapy in reducing pain. A total of 146 children with pain were randomly assigned to two groups, where 69 children in the acupressure group and 77 children in the physical therapy group. The mean post treatment pain score after a four week of treatment (2.28; SD=2.62) in the acupressure group was significantly lower than that in the physical therapy group (5.05; SD=5.11). The result suggested that acupressure is an effective alternative medicine in reducing pain.

Klein (2009) conducted an experimental study to find the effectiveness of massage in the acupressure point for reducing pain in children after injection. The study among 120 children between age of one to five years of age, with post test only design. The result shows that massage at acupressure point is very effective in reduction of pain after injection.

Yip (2009) conducted an experimental study to assess the effect of acupressure using an aromatic essential oil as a treatment of pain relief among children age between 0-15 years. A course of 8 session manual acupressure with lavender oil over a 3 week period. The baseline Visual Analog Score for the intervention and control groups were 5.12 and 4.91 out of 10, respectively (P=0.72). One month after the end of treatment, compared to the control group, the manual acupressure group had a 23% reduced pain intensity (P=0.02), 23% neck stiffness (P=0,001), 39% reduced stress level (P=0.0001), improved neck flexion (P=0.02), neck lateral flexion (P=0.02), and neck extension (P=0.01). However, improvements in the functional disability level were found in both the manual acupressure group (P=0.001) and control groups (P= 0.02). The result shows that it was an effective method of pain relief in children and no adverse effect were reported.

Long (2006) conducted a descriptive study to assess the opinions of acupressure regarding ice application at LI-4 point for reduction of pain by other health professionals. It was conducted on 250 children between the age of one to five years. The study results were concluded that 80% of acupresurists shared that any medical knowledgeable people can use it. 20% of them are told some training is needed for other people who are applying ice in order to apply acupressure effectively at specific points.

Charles (2006) conducted An experimental study to assess the effectiveness of ice application at LI-4 point for the reduction of injection pain in 120 school children**.** The sample was selected by using simple random method and pain level was assessed. The study result has shown that 74% of children were having mild pain, 14% of children had moderate pain and 12% of children with no pain. The result shows that application of ice at LI-4 level acupressure point is very effective in reduction of pain after injection.

Alimi (2003) conducted An experimental study to examine the efficiency of auricular acupressure in decreasing pain intensity in children with invasive procedure**.** 90 children were randomly divided in four groups. One group received two course of auricular acupuncture at point with an electro dermal signal being detected and two placebo groups received auriculo acupuncture at point with no electro dermal signal and one with auriculo seeds fixed at placebo points. The result had shown that greater reduction of pain intensity from auricular acupuncture for the children.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the data is gathered in order to answer the question to analyze the research problem. It enables the researcher to project the blue print of the research undertaken.

The research methodology involves a systematic procedure by which the researcher starts from the initial identification of the problem to its find conclusion (Polit & Beck, 2016). The present study was conducted to assess the effectiveness of ice cube application to reduce pain in children during intra muscular injection.

This chapter deals with a brief discussion of different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, selection of tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

RESEARCH APPROACH:

Polit and Beck, (2016) defined the research approach as ‘ a general set of orderly discipline procedure used to acquire information”.

To accomplish the objectives of the study, an experimental approach was used to determine the effectiveness of ice cube application on specific acupoint and study the level of pain in children during intramuscular injection.

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RESEARCH DESIGN:

Polit and Beck (2016) defined research design as the overall plan for addressing a research question, including specification for enhancing the study's integrity.

A true experimental research design was used for this study. True experimental research is a powerful method available for testing the hypothesis of cause and effect relationship between variables. It has the characteristic feature such as manipulation, control and randomization. Randomization was carried out to select 60 samples and to assign them in the control and experimental group. Ice cube application was given as intervention in the experimental group.

In this study, post test only design was adopted. The researcher manipulated the independent variable i.e., ice application to the experimental group of children. The effective of ice cube application upon the independent variable i.e., the level of pain in children was computed. The research design is represented diagrammatically as follows:

Post test only design

R - 0

R X 0

R- Randomization

X- Intervention

0 – Post test in control and experimental group

RESEARCH SETTING:

Research setting is the physical location and conditions in which data collection takes place in study (Polit & Beck, 2016).

The study was conducted in Pediatric Outpatient department in PPK Hospital, Marthandam. The Pediatric Outpatient department functions from Monday to Saturday between 9am to 1pm. Around 80 children come to Outpatient department every day and among them about 8 to 10 children receive Intramuscular injection.

VARIABLES:

Polit and Beck (2016) defined an attribute of a person or object that varies, that takes on different values

Independent Variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit & Beck, 2016).

In this study, the independent variable is ice cube application at specific acupoint(LI-4).

Dependent variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit & Beck, 2016).

In this study, the dependent variable is the level of pain in children during intramuscular injection.

Attribute variable

Variable that describes the study sample characteristics are termed as attribute variable (Polit & Beck, 2016).

In this study, the attribute variables are the demographic data of the children with age, gender, no of siblings, care taker, area of residence and education of care taker.

POPULATION:

Population is the entire set of individual or object having some common characteristics (Polit & Beck, 2016).

Target Population

The entire population is the aggregate of cases in which a researcher is interested and would like to generalize the study result (Polit& Beck, 2016).

The target population in the study comprises children who will have pain during intra muscular injection.

Accessible Population

The accessible population is the aggregate of cases that conforms to designated criteria and that are accessible as subject for a study (Polit & Beck, 2016).

The accessible populations in this study were the children between 4 to 7 years of age who receives Intramuscular Injection.

SAMPLE:

According to Polit & Beck (2016), the sample is a subset of the population selected to participate in a study.

A sample consists of children receiving intra muscular injection, who meets the inclusion criteria at a selected hospital in Kanyakumari district.

SAMPLE SIZE:

A sample size of 60 children who meet the inclusion criteria is chosen for this study, in that 30 will be taken for control group and 30 will be taken for experimental group.

SAMPLING TECHNIQUE:

Sampling is the process of selecting a portion of the population to represent the entire population (Polit & Beck, 2016).

The participants of the present study will be selected by systematic random sampling technique, in which the children who satisfies the inclusion criteria were selected and categorized as ‘A’ and ‘B’. The children who are categorized ‘A’ was assigned to control group and categorized ‘B’ to experimental group.

SAMPLING CRITERIA:

Inclusion Criteria

- Both male and female children between 4 to 7 years of age.
- Children receiving intramuscular injection.

Exclusion Criteria

- Children with any physical illness
- Children who are not willing to participate

DESCRIPTION OF THE TOOLS

Treece and Treece (1986) emphasized that the instrument in the research should as far as possible be the vehicle that could best obtain data for drawing a conclusion pertinent to the study.

The effectiveness of ice cube application upon level of pain in children during intramuscular injection in children age group 4 to 7 years of age was assessed by FLACC scale for pain assessment.

Section A: Demographic pro forma for children

Demographic pro forma of children includes the age in months, gender, type of family, area of residence, family monthly income.

Section B: FLACC scale for pain assessment

FLACC scale for pain is a standardized scale which was developed by Merkel et al in 1997. It consists of five criteria- face, leg, activity, cry, consolabilty. Each criterion has scores 0,1 and 2.

Scoring Key	Level of Pain	Interpretation
1	**No Pain**	**0**
2	**Mild Pain**	**1 – 3**
3	**Moderate Pain**	**4 – 6**
4	**Severe Pain**	**7 – 10**

INTERVENTION PROTOCOL:

In the experimental group, the child was placed in a comfortable position in the care takers lap or a chair and a small ice bag is made with ice cube and terry wash cloth. The Acupoint (LI-4) site was identified and ice bag was applied over the area for 30 seconds. It was then repeated in both hands of the children. Once an ice cube application is over, the intramuscular injection was administered. Level of pain in children was assessed using FLACC scale.

CONTENT VALIDITY:

Content validity is the degree to which an item in an instrument adequate represents the universe of the content (Polit & Beck, 2016)

The tools were given for validation to 6 experts in the field of research and nursing. The validators had suggested some modification in the demographic variable proforma. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

RELIABILITY:

The reliability is the degree of consistency with which an instrument measures the attribute which is designed to measure (Polit & Beck, 2016).

Face Leg Activity Cry Consolability (FLACC) Scale

The reliability of the tool was determined by inter rater reliability 0.92 after the procedure for FLACC scale. It found to be highly reliable.

PILOT STUDY:

Pilot study is a miniature version of actual study, in which the instrument is administered to the subject drawn from the sample population. It is small scale version or trial run done in preparation for major study (Polit & Beck, 2016).

The pilot study was done after obtaining formal approval from Director of P.P.K Hospital, Marthandam. The researcher introduced herself to the study subject and established good rapport. Then the researcher gave a short introduction about her study and ice cube application on acupoint. The sample were selected using the systematic random sampling technique. Based on inclusion criteria, six samples were selected. Three samples were allotted for experimental group and three samples were allotted for control group. In the experimental group, the child was placed in a comfortable position in the care takers lap or a chair and a small ice bag is made with ice cube and terry wash cloth. The LI-4 site was identified and ice bag was applied over the area for 30 seconds. It was then repeated in both hands of the children. Once an ice cube application is over,

the intramuscular injection was administered. Level of pain in children was assessed for both groups using FLACC scale.

METHOD OF DATA COLLECTION:

Data collection is the gathering of information needed to address a research problem (Polit & Beck, 2016).

After obtaining approval of the dissertation committee of Global college of Nursing and formal approval from the Director of PPK hospital, the investigator proceeded with the data collection.

The data was collected from 03rd April 2017 to 04th May 2017 at PPK Hospital, Marthandam. Introduction about investigator was given to samples. The investigator established good rapport with the children and the care taker, and assured that the information would be kept confidential. Written consent was obtained from the care taker.

In this study, children who satisfied the inclusion criteria were selected by systematic random sampling, and categorized as 'A' and 'B'. The children who were in category 'A' were assigned to control group and those in 'B' to experimental group.

The researcher collected the demographic variables by interviewing the parents. The children in the control group were assessed using a FLACC scale for pain levels after intramuscular injection without any intervention. In the experimental group, ice cube application was given for a period of 30 second in LI-4 acupoint, before

intramuscular injection. After ice cube application, intra muscular injection was given and post assessment of pain was done immediately for 60 seconds by using FLACC scale for pain assessment.

PLAN FOR DATA ANALYSIS:

Data analysis is a systematic organization and synthesis of research data and testing of research data and testing of research hypothesis by using the obtained data (Polit & Beck, 2016).

Both descriptive and inferential statistics were used to analyze the data.

Descriptive Statistics:

1. Frequency and Percentage distribution was used to analyze the demographic variables.
2. Frequency and Percentage distribution was used to evaluate the level of pain.
3. Mean and Standard deviation was used to evaluate the effectiveness of ice cube to reduce the level of pain.

Inferential Statistics:

1. Unpaired ‘t’ test was used to compare the level of pain in control and experimental group of pain.
2. Chi- square test was used to find the association of demographic variables with the level of pain in Control group and Experimental group.

ETHICAL CONSIDERATION:

The proposed study was conducted after the approval of the dissertation committee of Global college of Nursing. Formal approval was obtained from the PPK Hospital. Informed written consent was obtained from each care taker before starting the data collection. Assurance was given to the care takers regarding the confidentiality of the data collected.

SUMMARY:

This chapter dealt with the research methodology. It includes selection of research approach, research design, setting, population, sample, sampling technique, sampling criteria, selection and development of study instruments, validity and reliability of study instrument, pilot study, data collection procedure and plan for data analysis. In the following chapter, analysis is interpreted using descriptive and inferential statistics.

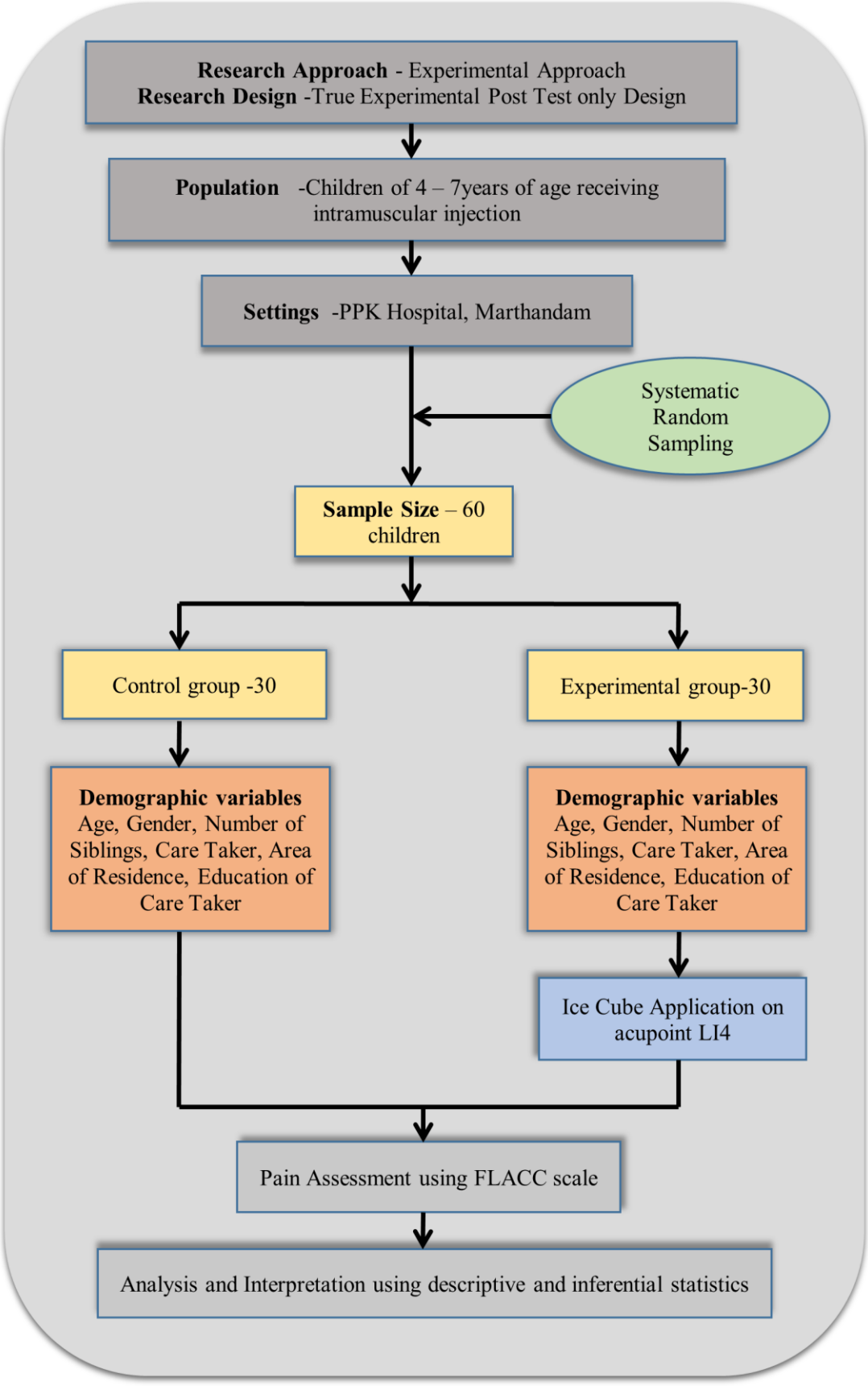

Fig.2. Schematic Representation of the Research Methodology

CHAPTER –IV

ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected on a number of issues from various sources. Statistics is a field of study concerned with techniques or methods of data collection, classification, summarizing, interpretation, drawing inferences, testing of hypothesis and making recommendations (Mahajan, 2014).

Data was collected from 60 mothers of children receiving intramuscular injection at PPK Hospital, Marthandam, among them 30 were in control group and 30 in experimental group to determine the effectives and hypothesis of the study. The data were analyzed, tabulated and interpreted using descriptive and inferential statistics.

Study Findings

The findings of the study were presented as sections as follows.

Section-I:

Frequency and percentage distribution of demographic variables in the control and experimental group of children.

Frequency and percentage distribution of level of pain by the children during intramuscular injection measured by FLACC scale in experimental and control group of children.

Section-II:

Comparison mean and standard deviation of level of pain by control and experimental group of children during intramuscular injection measured using FLACC scale.

Section III:

Association between selected demographic variable and level of pain in children on control group and experimental group using FLACC scale.

Section –I:

Table.1

Frequency and Percentage Distribution of Demographic Variables in the Control and Experimental Group of Children

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	n	%	n	%
Age of the child				
<4 years	-	-	-	-
4-5 years	10	33.3	8	26.6
5.1-6 years	16	53.3	20	66.6
6.1-7 years	11	13.3	2	6.6
Gender of the child				
Male	18	60	14	46.6
Female	12	40	16	53.3
Number of Siblings				
None	11	36.6	9	30
One	15	50	19	63.3
Two or More	4	13.3	2	6.6
Care Taker				
Parent	18	60	12	40
Grandparent	10	33.3	11	36.6
Others	2	6.6	7	23.3
Area of Residence				
Urban	17	56.6	22	73.3
Suburban	10	33.3	7	23.3
Rural	3	10	1	3.3
Education of the Care Taker				
Uneducated	1	3.3	-	-
High School	4	13.3	9	30
Undergraduate	19	63.3	12	40
Post Graduate	6	20	9	30

The data in the Table-1 reveals that majority of the children are from 5.1 to 6 years (53.3%, 66.6%), males (60%, 46.6%), with sibling one or more (63.3%, 70%), accompanied by Parent to hospital (60%, 40%), in control and experimental group of children respectively.

Fig.3: Shows the percentage distribution of child's age in control and experimental group of children. Majority of the children (53.3%, 66.63%) are in age group of 5-6 years in control and experimental group of children respectively.

Fig.4: Shows the percentage distribution of child's gender in control and experimental group of children. 60% of male in control group and 53.3% of female in experimental.

Fig.5: Shows the percentage distribution of number of siblings in control and experimental group of children. Majority of the children (50%, 63.3%) have one siblings in control and experimental group of children respectively.

Fig.6: Shows the percentage distribution of child's care taker in control and experimental group of children. Majority of the children (60%, 40%) are accompanied by Parents in control and experimental group of children respectively.

Fig.7: Shows the percentage distribution of area of residence in control and experimental group of children. Majority of the children (56.6%, 73.3%) resides in urban area in control and experimental group of children respectively.

Fig.8: Shows that (83.3%, 70%) of mothers of children are educated above high school in control group and experimental group.

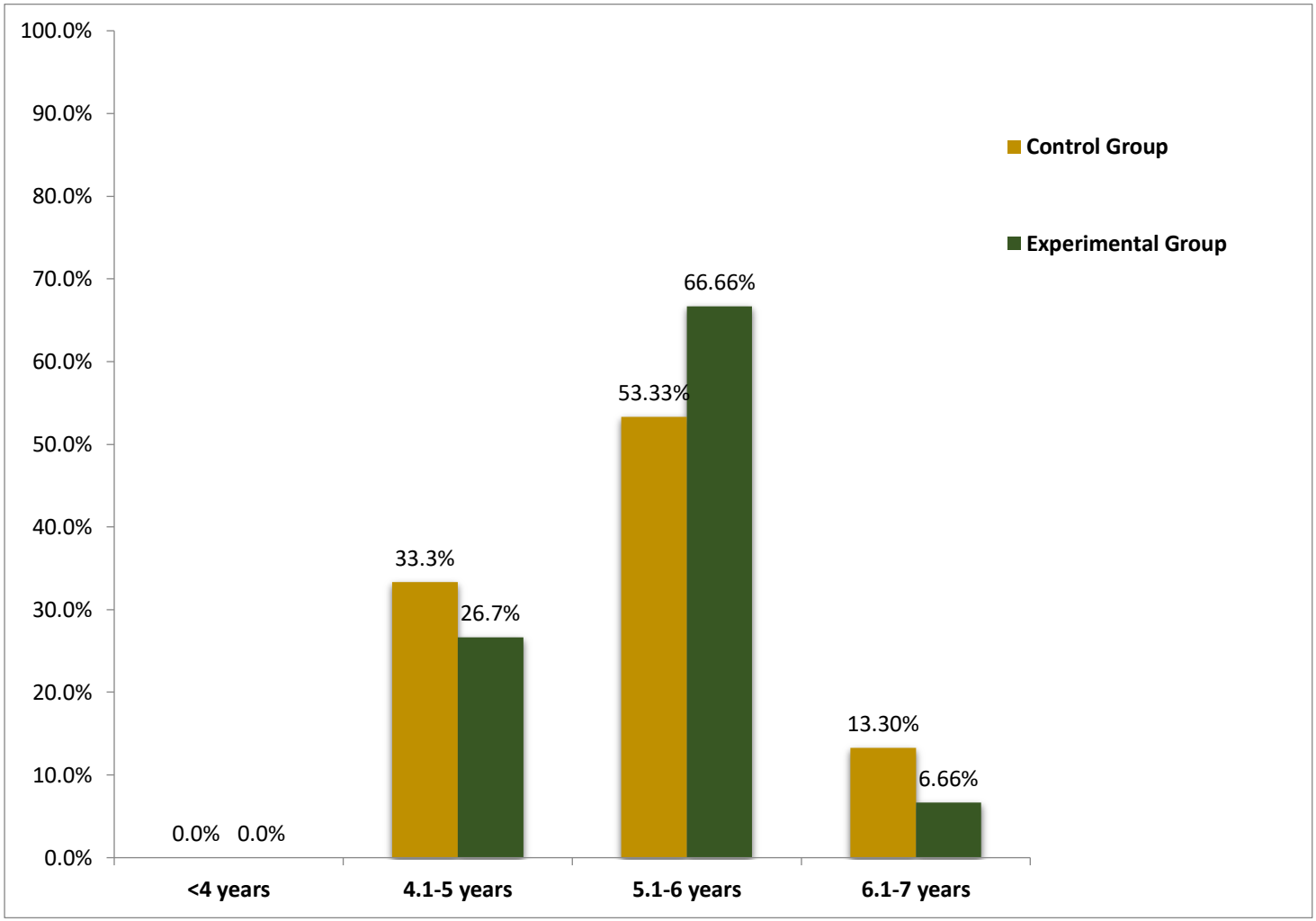

Fig-3: Percentage Distribution of Children's Age in Control and Experimental Group

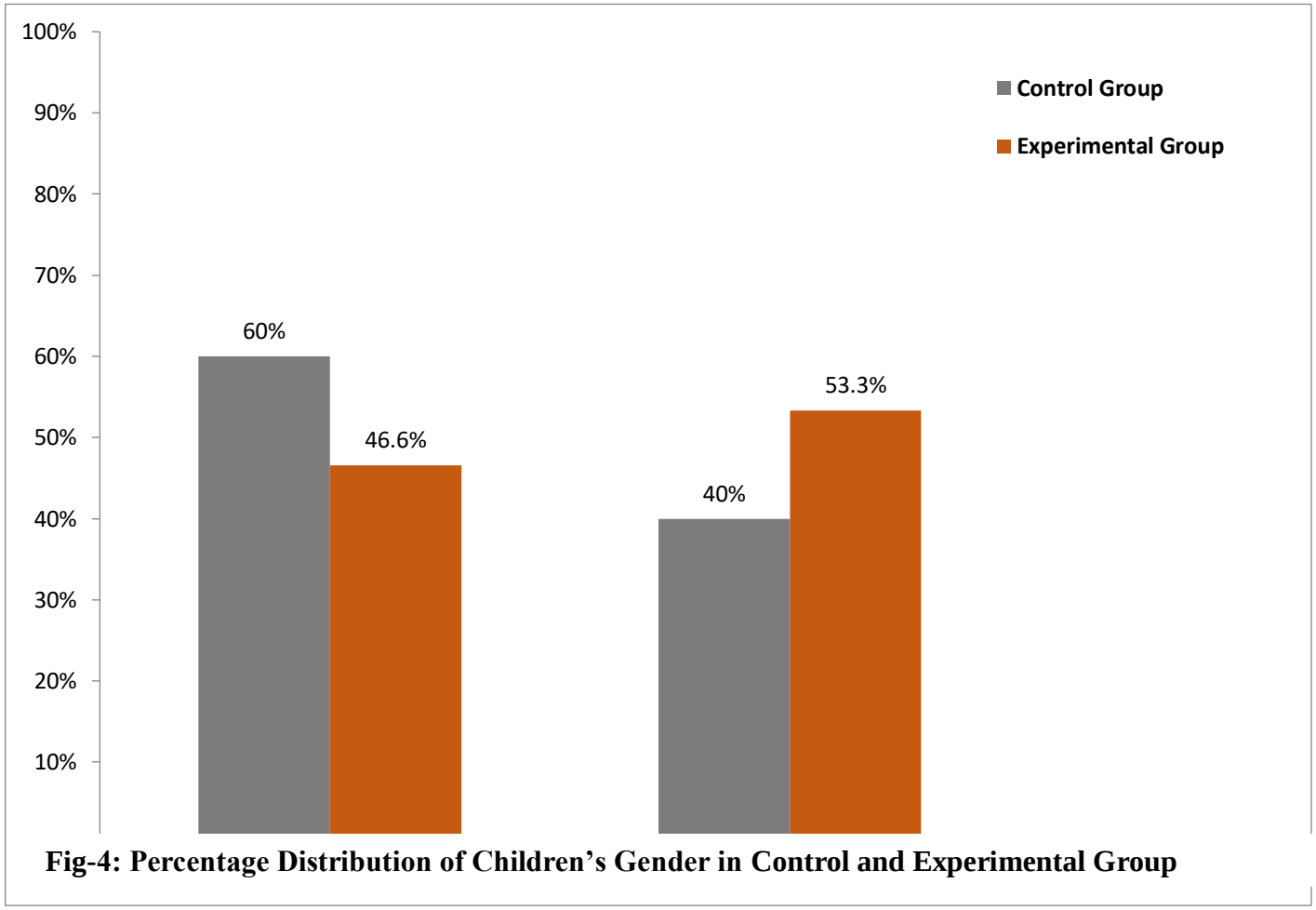

Fig-4: Percentage Distribution of Children's Gender in Control and Experimental Group

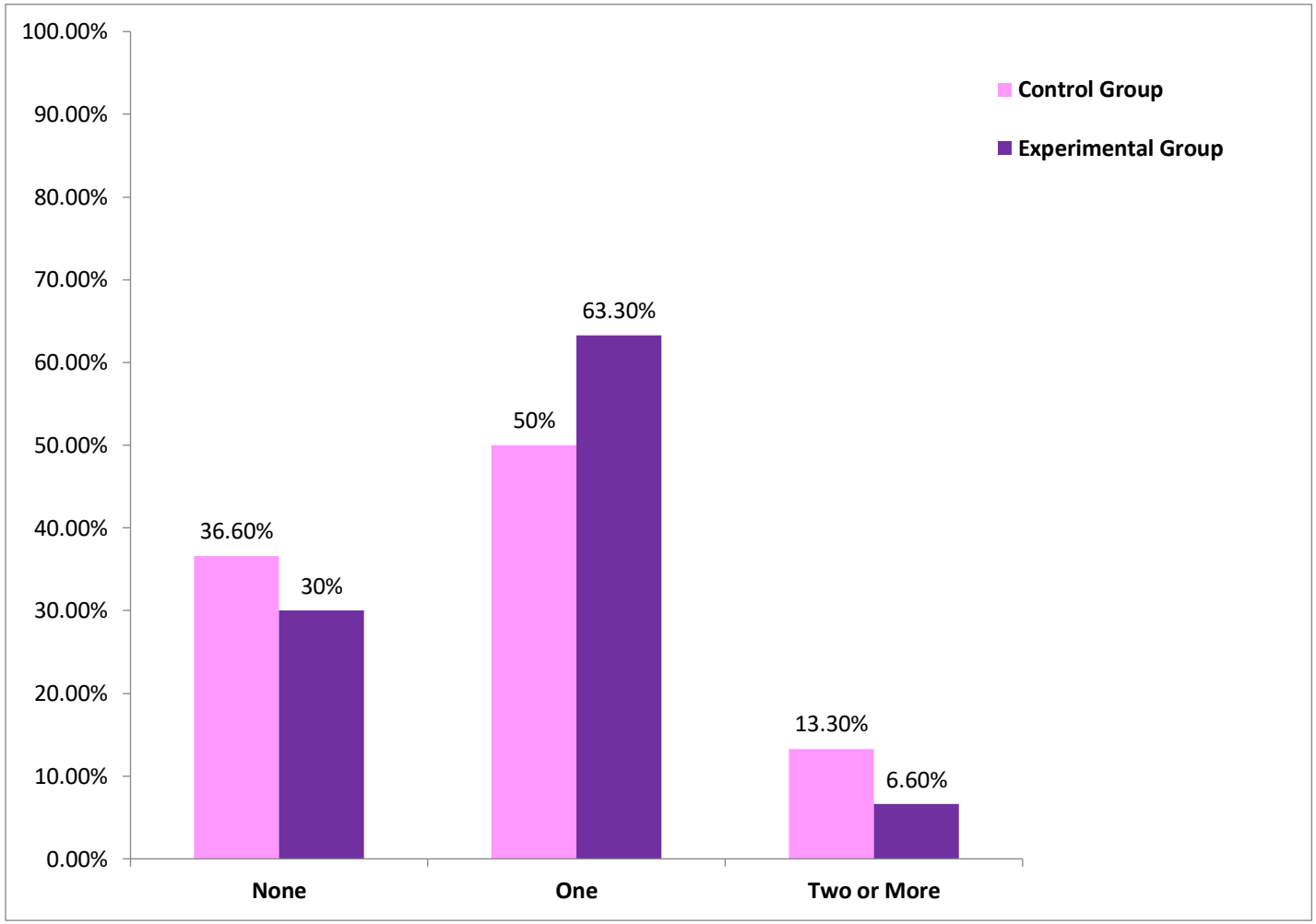

Fig-5: Percentage Distribution of Number of Siblings in Control and Experimental Group of Children

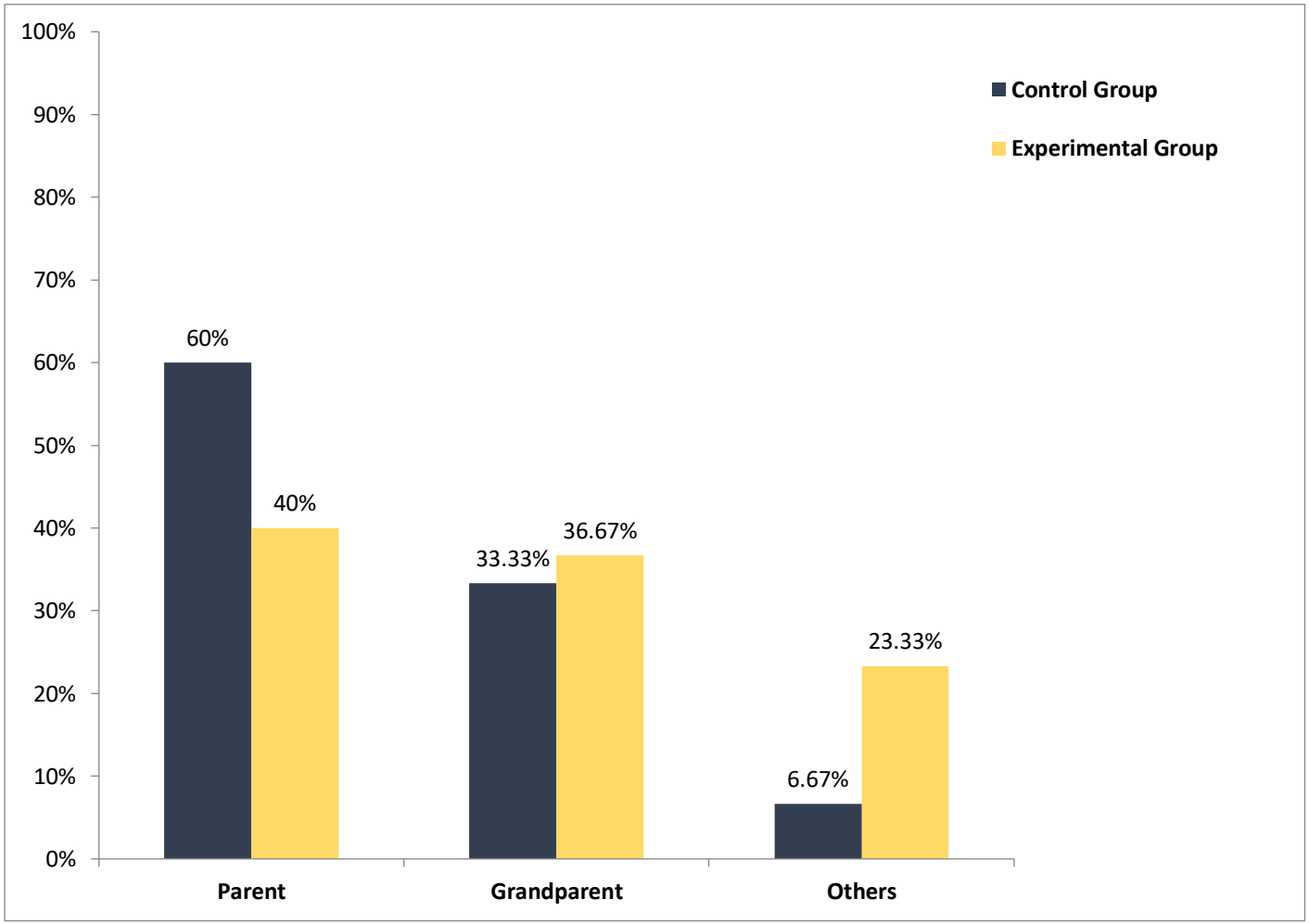

Fig-6: Percentage Distribution Child's Care Taker in Control and Experimental Group

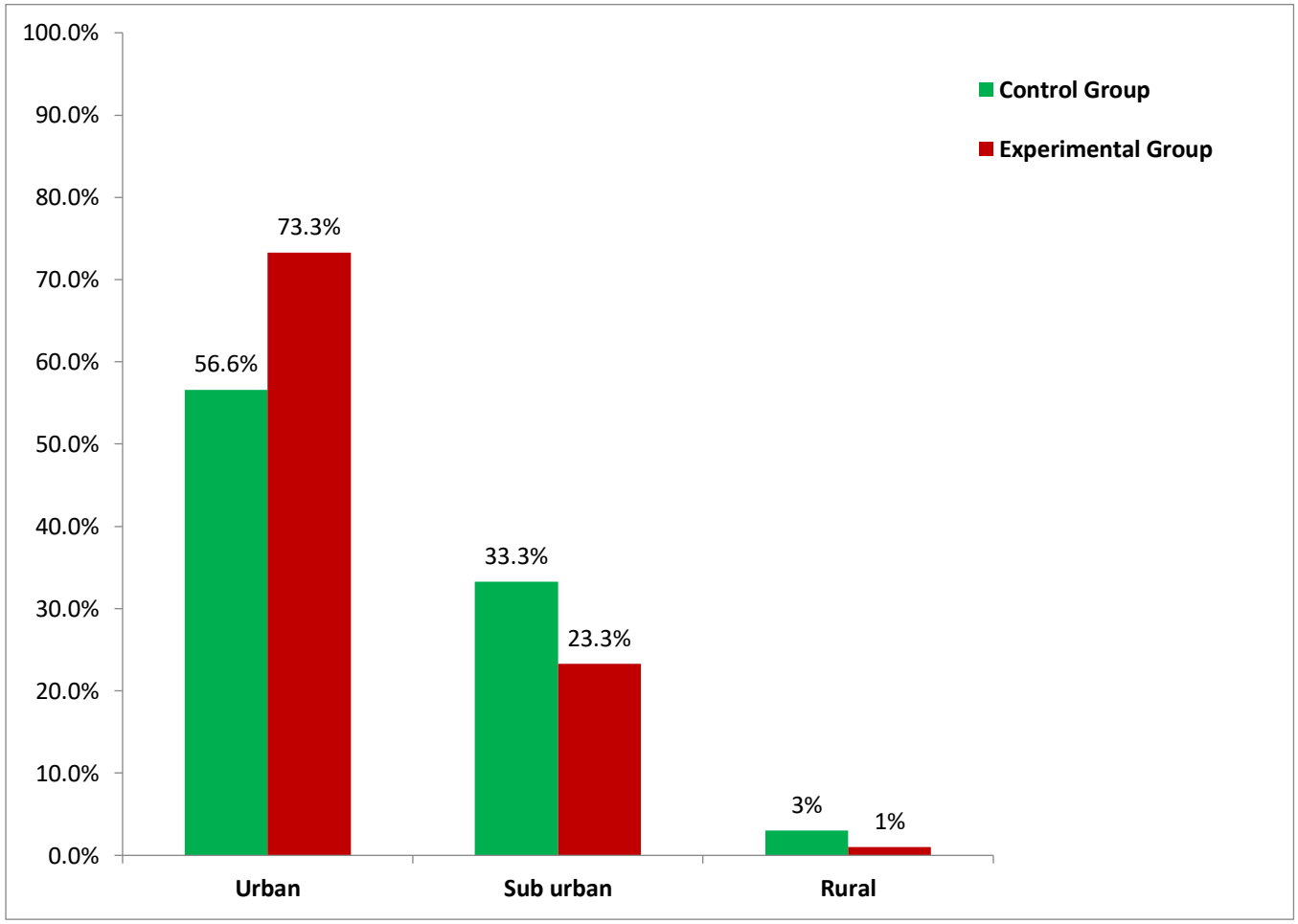

Fig-7: Percentage Distribution of Children's Area of Residence in Control and Experimental Group

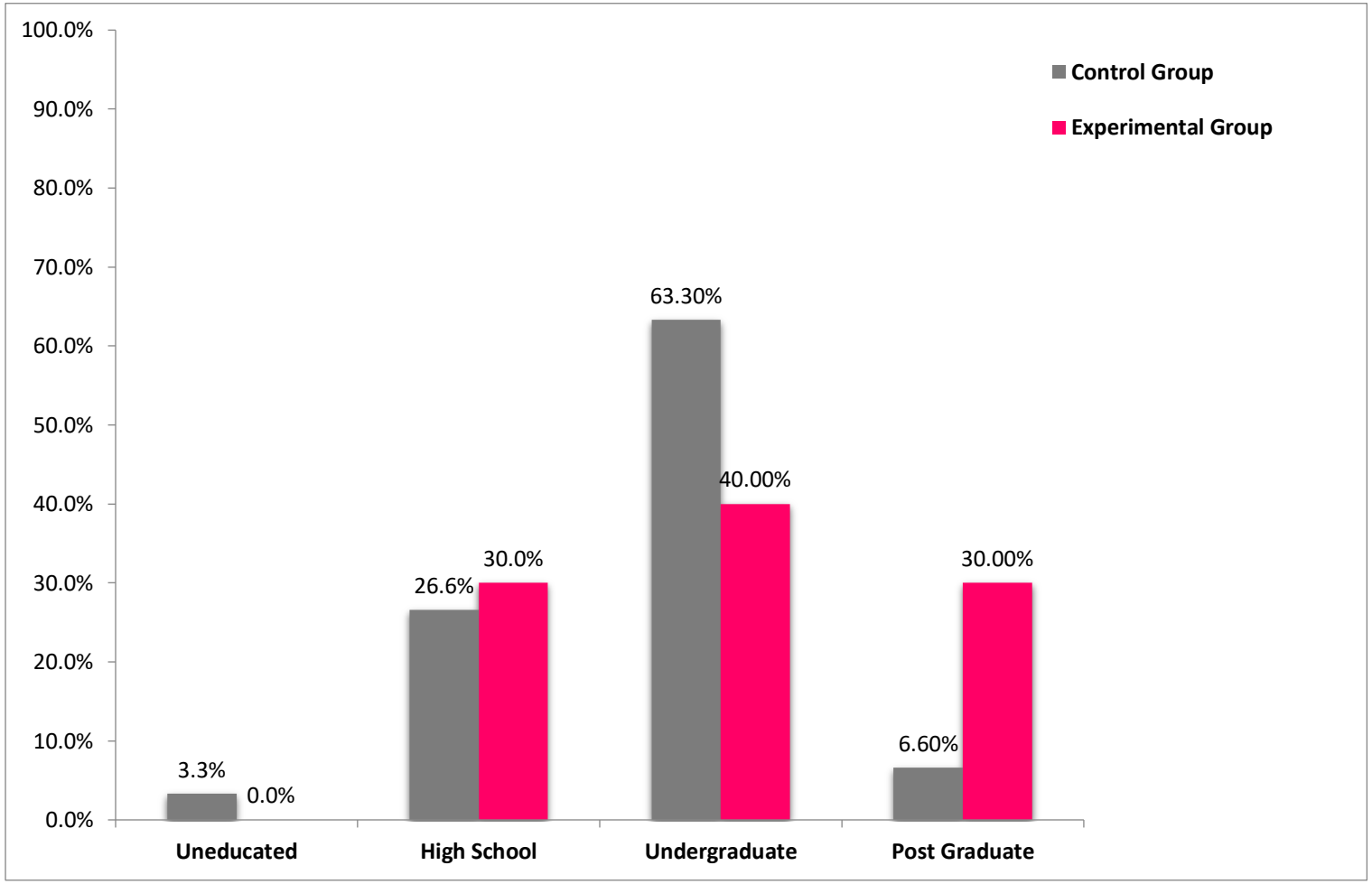

Fig-8: Percentage Distribution of Care Taker's Education in the Control and Experimental Group of Children

Table.2

Frequency and Percentage Distribution of Pain Levels in Children During Intramuscular Injection Measured by FLACC scale

Pain measured by FLACC / group	No pain		Mild		Moderate		Severe	
	n	%	n	%	n	%	n	%
Control group	-	-	-	-	5	16.6	25	83.3
Experimental group	2	6.6	20	66.6	8	26.6	-	-

The data presented in the Table-2 reveals that majority of children in the control group had moderate and severe pain 100% during intramuscular injection, whereas in experimental group 66.6% of children had mild pain.

Section-II:

Table.3

Comparison of Mean and Standard Deviation of Pain Levels of Control and Experimental Group of Children During Intramuscular Injection Measured by FLACC scale

(n=60)

Group	n	M	SD	Mean Difference	Unpaired 't' value
Control group	30	7.36	1.49		
				4.46	11.84*
Experimental group	30	2.9	1.4227		

***P<0.05**

The data in the Table-3 depicts that the mean and standard deviation of the control and experimental group of children is 7.36, 1.49; 2.9, 1.4227 respectively. The estimated 't' value of 11.84 is highly significant at $p<0.05$. This shows that ice cube application was effective in reducing pain level. Hence the research hypothesis (H_1) is accepted.

Table.4

Association between the Selected Demographic Variable and Pain Perception of Children in Control Group using FLACC scale

(n=30)

Demographic variables	FLACC score				$\chi 2$	5% level of significance
	Upto mean		Above mean			
	n	%	n	%		
Age of the child in years						
Upto 5 years	2	6.6	8	26.6	0.12	NS
Above 5 years	3	10	17	56.6	df=1	
Gender of the child						
Male	2	6.6	16	53.3	1	NS
Female	3	10	9	30	df=1	
Number of Siblings						
None	1	3.3	10	33.3	0.71	NS
One or More	4	13.3	15	50	df=1	
Care Taker						
Parents	3	10	15	50	0	NS
Others	2	6.6	10	33.3	df=1	
Area of residence						
Urban	1	3.3	16	53.3	3.28*	S
Suburban & Rural	4	13.3	9	30	df=1	
Education of Care Taker						
Upto High School	1	3.3	4	13.3	0	NS
Above High School	5	16.6	20	66.6	df=1	

*$p<0.05$

From the Table-4, it could inferred that there was a significant association between area of residence and level of pain in control group of children.

Table.5

Association between the Selected Demographic Variable and Pain Perception of Children in Experimental Group using FLACC scale

(n=30)

Demographic variables	FLACC score				$\chi 2$	5% level of significance
	Upto mean		Above mean			
	n	%	n	%		
Age of the child in years						
Upto 5 years	5	16.6	3	10	0.65	NS
Above 5 years	17	56.6	5	16.6	df=1	
Gender of the child						
Male	10	33.3	4	13.3	0.04	NS
Female	12	40	4	13.3	df=1	
Number of Siblings						
None	6	43.3	3	10	0.29	NS
One or More	16	53.3	5	16.6	df=1	
Care Taker						
Parents	10	33.3	2	6.6	1.02	NS
Others	12	40	6	20	df=1	
Area of residence						
Urban	17	56.6	5	16.6	0.65	NS
Suburban & Rural	5	16.6	3	10	df=1	
Education of Care Taker						
Upto High School	3	10	6	20	10.51*	S
Above High School	19	63.3	2	6.6	df=1	

*$p<0.05$

From the Table-5, it could be inferred that there is a significant association between the education of the care taker and level of pain in the experimental and no significant association between other demographic variable and level of pain in experimental group of children.

Summary

This chapter dealt with the analysis and interpretation of the data obtained by researcher. The analysis of the data using descriptive and inferential statistics clearly revealed the effectiveness of ice cube application before intramuscular injection and level of pain in children. In the following chapter interpretation of the study findings are discussed in detail.

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analyzed based on the objective and hypothesis of the study. The statement of problem is a study to assess the effectiveness of ice cube on a specific acupoint to reduce pain before intramuscular injection among the children at a selected hospital, kanyakumari district.

Objectives

1. To assess the level of pain after Ice cube Application on a specific Acupoint among the control and the experimental group of children.
2. To find the effectiveness of Ice cube Application on a specific Acupoint among the control and the experimental group of children.
3. To determine the association between selected demographic variables and the level of pain among the control and the experimental group of children.

The first objective of the study was to assess the level of pain after Ice cube Application on a specific Acupoint among the control and the experimental group of children

The level of pain perceived by children after intramuscular injection in control and experimental group was measured by using FLACC scale. Majority of the children in control group had severe pain (83.33%) where as in experimental group (66.6%) had mild pain.

The health care provider should accommodate for the patient's comfort, safety, age, activity level, and the site of administration when considering patient positioning and restraint. The care takers should be encouraged to hold the children during administration. Parent participation has been shown to increase the child's comfort. The care taker should be instructed on how to help the child stay still so the injection can be administered safely. If the caretaker is uncomfortable, another person may assist or the patient may be positioned safely on an examination table. It reduces the stress in children and gives a secure feeling.

The level of pain in children was assessed using Face Leg Activity Cry Consolability (FLACC) Scale in both control and experimental group of children. The mean and standard deviation of pain score in control group is M=7.36, SD=1.49 and that of experimental group is M=2.9, SD=1.4227 which indicate experimental group had lower level of pain in comparison with control group.

Painful stimulation occurs during to intramuscular injection is unavoidable. But the transmission of the stimuli can be blocked by various distraction techniques in children. As one of the measures, the children in the experimental group were applied ice cubes in LI-4 acupoint before administration of injections and the findings revealed that the level of pain is reduced in children when compared to the control group of children.

Holbert (2006) conducted a study to assess the effectiveness using pressure to decrease pain during intramuscular injections. The purpose of this study was to determine if applying pressure to the site for 10 seconds prior to an intramuscular injection would reduce injection pain, an approach suggested by anecdotal observation and the gate control theory. The subjects were 93 children who had vastus lateralis intramuscular injections of immune globulin at a county health department. Forty- eight received the

pressure treatment at acupressure site and 45 received a standard injection in which no pressure was applied. Mean pain intensity on a 100mm visual analogue scale, adjusted for differences in injection volume, was 13.6mm for the experimental group and 21.5mm for the control group (P=0.03). The findings suggest that simple manual pressure applied to the site is a useful technique to decrease injection pain.

The second objective of the study was to determine the effectiveness of Ice cube Application on a specific Acupoint by comparing the level of pain between the control and the experimental group of children.

The effectiveness of ice cube application upon the level of pain among the experimental group of children during intra muscular injection was assessed statistically using the independent 't' test. The mean and standard deviation of pain score was lower in experimental group (M=2.9, SD=1.4227) of who received ice cube application before intra muscular injection when compared to the control group of children (M=7.36, SD=1.49). The difference was statistically at P<0.0001, that 't' value is 11.84. The result could be attributed to the effectiveness of ice cube application upon level of pain in children during intramuscular injection.

Application of ice cubes which stimulates the large diameter sensory fibers that synapse in the dorsal horn of the spinal cord which produces an inhibitory effect on the transmission of incoming pain signal, from the small diameter sensory fibers stimulated by fine hair like needle puncture through acupuncture or firm pressure through acupressure or other intervention in the acupoint, causes fewer pain signal to reach the brain and reducing the level of it and hence the child's level of pain is reduced.

Hence the hypothesis H_1, there will be a significant difference in level of pain after intra muscular injection among control and experimental group of children is accepted.

The researcher concluded that the findings must be disseminated so that evidence based knowledge can be utilized in the clinical setting to reduce the level of pain in children during intra muscular injection.

The third objective of the study was to find out the association between selected demographic variables and level of pain during intra muscular injection in the control and experimental group of children.

Chi- square test is used to find out the association between the selected demographic variable and the level of pain of children. It is inferred that there will be a significant association between demographic variable like age, gender, number of siblings, care taker, education of the care taker and level of pain at $p< 0.05$ in control and experimental group.

In control group, this study reveals that there was no significant association between age of the child with chi square value 0.12, gender of the child with chi square value 1, number of siblings with chi square value 0.71, and both care taker and education of the care taker with chi square value of 0, and the level of pain. There is a significant association between the area of residence of the children with chi square value 3.28 at $p<0.05$, and the level of pain in control group.

In experimental group, it was found that there was no significant association between age of the child with chi square value 0.65, gender of the child with chi square value of 0.04, number of siblings with chi square value 0.29, care taker with chi square value 1.02, and area of residence with chi square value 0.65, and the level of pain. There is a significant association between education of the care taker with chi square value 10.51 at $p<0.05$, and level of pain in experimental group during intra muscular injection. Hence, the hypothesis H_2 was partially accepted with regard to area of residence in control group and education of the care taker in experimental group of children.

Summary

This chapter dealt with objectives of the study and, major finding such as the association between demographic variable and the level of pain in children on ice cube application during intra muscular injection.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

The heart of the research project lies in reporting the finding. This is the most creative and demanding part of the study. This chapter gives a brief account of present study and recommendations.

Summary

An experimental approach with post design only was used to determine the effectiveness of ice cube on specific acupoint to reduce pain before intramuscular injection among children at selected hospitals in kanyakumari district. The conceptual frame work was based on General system Theory of Ludwig Von Bertalanffy (1968) Model. The tool used in this study was demographic variables proforma and FLACC pain assessment scale. Systematic random sampling technique was used to collect the sample and the data was collected from the study participant in experimental and control group. The data were analyzed using descriptive and inferential statistics. The level of significance was assessed by $p>0.05$ to test the hypothesis.

Findings

Majority of the children were in the age group of > 5.1 years (66.6%, 73.3%) with sibling one or more (63.3%, 70%), Parent's being their care taker (60%, 40%), living in Urban (56.6%, 73.3%) and had educated mothers (96.6%, 100%) in control and experimental group of children respectively.

The mean and standard deviation of pain levels of children in the control group is Mean=7.36, SD=1.49 and experimental group is Mean =2.9, SD=1.42 respectively and

the Mean difference between them is 4.46. The 't' value of 11.84 is highly significant at $p<0.05$ level if significance. Thus the hypothesis H_1 there will be a significant difference in the level of pain during intra muscular injection among control and experimental group of children was accepted.

There was a significant association between area of residence and level of pain with chi square value 3.28 at $p<0.05$ in control group children and no significant association between other demographic variable and the level of pain in the control group of children. It was inferred that there is a significant association between the education of the care taker and the level of pain with chi square value 10.51 at $p<0.05$ in the experimental and no significant association between other demographic variable and the level of pain in the experimental group of children. Hence, hypothesis H_2 was partially accepted with regard to area of residence in control group and to education of the mother in experimental group of children and partially rejected with regard to other demographic variables in control and experimental group of children.

Conclusion

The intramuscular injection is a stressful event for children. It is necessary to provide pharmacological or non pharmacological intervention to reduce the pain and discomfort in children. The findings of the study indicated that the ice cube application is simple, safe, cost effective and easy to administer than any other pharmacological pin intervention. So it must be incorporated in clinical setting as a pain intervention measure.

Implication

The findings of the study have implication in the different branches of nursing profession i.e., nursing practice, nursing education, nursing administration and nursing

research. By assessing the effectiveness of ice cube application during intramuscular injection, we get a clear picture regarding different steps to be taken in all fields, to improve the standards of nursing profession.

Nursing practice

As intramuscular is the common route for administration of immunization and is a painful procedure from birth, pain management is very essential. As it was identified from the study findings the ice cube application was an effective pain management during intramuscular injection. As nurses play a major role in identifying the health need for children, they should have awareness about the simple pain management intervention, to relieve pain and discomfort of the children during injections. All institutions and clinics should be supported and encouraged to facilitate this kind of non pharmacological measures during injections.

Nursing educations

Integration of theory and practice is a vital need and it is important in nursing education. Care of children has been included since the beginning years of nursing education. Care of children has been included since the beginning years of nursing education. The focus on measures nursing education must focus on innovation to enhance nursing care. Some research suggests that ice cube application is a non pharmacological measure to reduce pain.

This research suggests that ice cube application is a non pharmacological measure to reduce pain. The research findings suggest that the ice cube application is simple, safe, cost effective and easy to administer than any other pharmacological pain intervention. So it must be incorporated in clinical setting as a pain intervention measures. Nursing

education curriculum should be incorporated with emphasis on non pharmacological measures to reduce the pain of children during hospital stay. The nursing students should be taught about the importance of various pain relief measures that could implemented in care of children.

Nursing administration

With technological advances and every growing challenge of health care needs, the administration has a responsibility to provide nurses with substantive confined education opportunities. This will enable the nurses to update their knowledge on latest pain management strategies available to demonstrate high quality care. Periodic formal training program for nurses on pharmacological and non pharmacological pain management measures should be conducted. Nurse administration can arrange conferences, in service education and workshop to encourage staff nurse to learn about various alternative and complimentary therapies used as pain relief strategies.

Nursing research

In India, evidence based clinical strategies are not sufficient. As there are fewer studies related to pain intervention during injection, there is need for extensive and intensive studies in this area. Nurse researcher should challenge to perform scientific intramuscular injection. Researchers must focus on various aspects and develop appropriate tools for pain assessments in children during injection. It opens the large avenue for research. Since ice cube application can be implemented to children who receive intra muscular injection and its effectiveness can be tested through research. Dissemination of the findings of evidence based practice through conferences, seminars, publications in national and international nursing journals and Internet media will benefit a wider community.

Recommendations

- The study can be conducted on larger sample to generalize the results.
- The study can be conducted in different settings
- The study can be conducted for pain management during other invasive procedures.
- A comparative study can be conducted to evaluate the effectiveness of various other interventions to reduce pain.
- The study can be conducted among children of different age groups.
- A comparative study can be conducted to assess the effectiveness of ice cube application with other intervention like pharmacological cream application during intramuscular injection.

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APPENDIX -I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Tel. (O) : 273297
270753

GLOBAL COLLEGE OF NURSING

Recognised by the TNC & INC
Affliated to Tamil Nadu Dr. M.G.R. Medical University
Edaivilagam, Nattalam, Kanyakumari District.

Off: S.G. Multi Speciality Hospital, Old Theatre Jn, Pammam, Marthandam - 629 165, K.K. Dist., Tamil Nadu. Mob : 9443606955, 9944110448.

To

The Medical Director,

PPK Hospital,

Marthandm.

Respected Sir,

Sub: Permission seeking letter for the conduct of research-Reg.

This is to request you to kindly permit Mrs. Presila Reyona P (Child Health Nursing) 2nd year M.Sc. (N), Global College of Nursing to conduct her study in your esteemed institution.

3. She will abide the rules and regulation of the Institution.
4. She will not interrupt the normal routine of the hospital functions.

STATEMENT OF THE STUDY

"A study to assess the effectiveness of ice cube on a specific Acupoint to reduce pain before Intramuscular injection among children at selected hospital in Kanayakumari District"

So kindly consider this letter and do the needful.

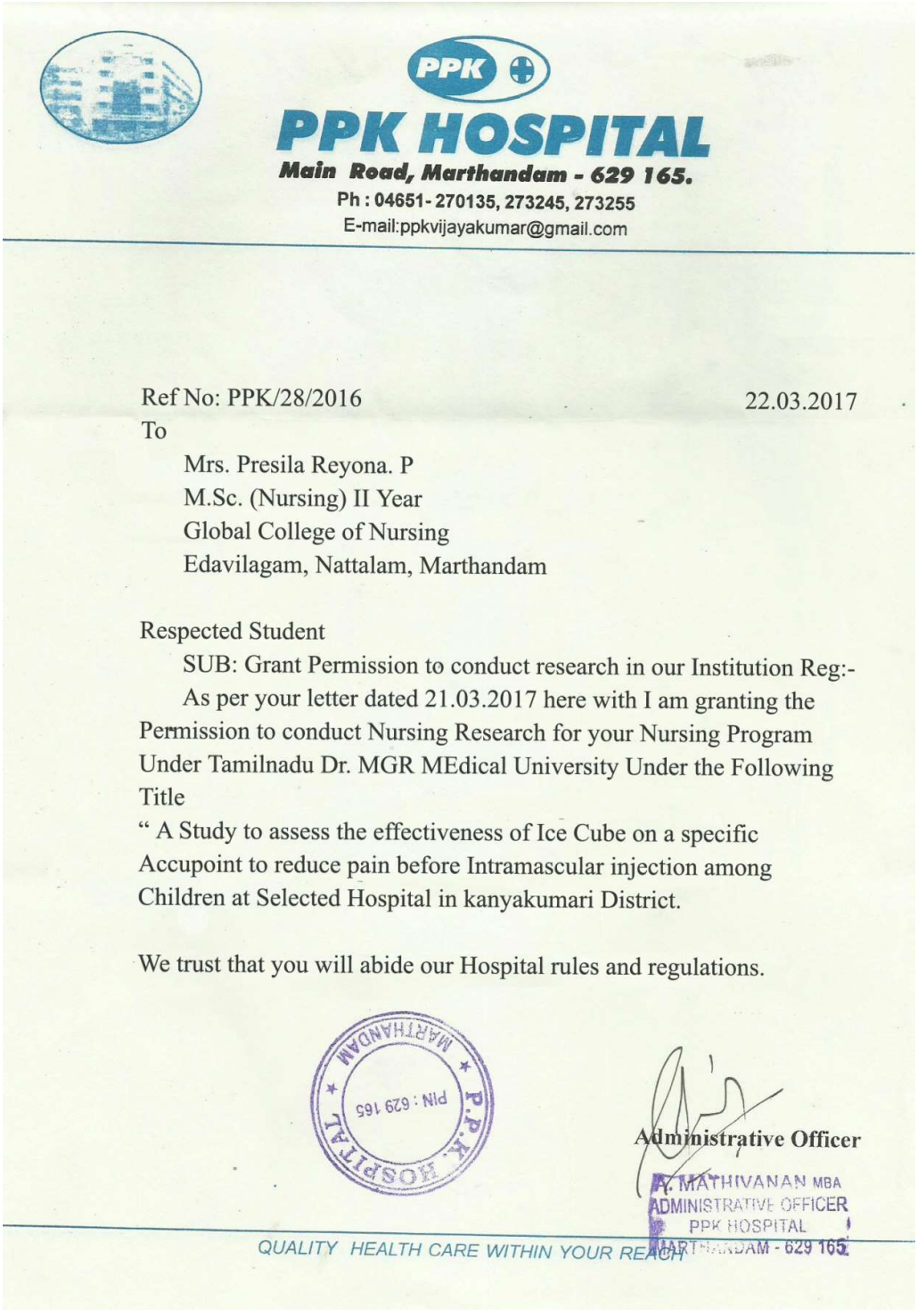
Thanking You,

GLOBAL COLLEGE OF NURSING ★ NATTALAM, K.K. DIST. ★ 629

Principal
Principal
GLOBAL COLLEGE OF NURSING
Edavilagam,Nattalam,
Kanyakumari District - 629 195

APPENDIX -II

LETTER PERMITTING TO CONDUCT THE STUDY



PPK HOSPITAL
Main Road, Marthandam - 629 165.
Ph : 04651- 270135, 273245, 273255
E-mail:ppkvijayakumar@gmail.com

Ref No: PPK/28/2016 22.03.2017

To

Mrs. Presila Reyona. P
M.Sc. (Nursing) II Year
Global College of Nursing
Edavilagam, Nattalam, Marthandam

Respected Student

SUB: Grant Permission to conduct research in our Institution Reg:-

As per your letter dated 21.03.2017 here with I am granting the Permission to conduct Nursing Research for your Nursing Program Under Tamilnadu Dr. MGR MEdical University Under the Following Title

" A Study to assess the effectiveness of Ice Cube on a specific Accupoint to reduce pain before Intramascular injection among Children at Selected Hospital in kanyakumari District.

We trust that you will abide our Hospital rules and regulations.

MARTHANDAM P.P.K. HOSPITAL PIN : 629 165

Administrative Officer

A. MATHIVANAN MBA
ADMINISTRATIVE OFFICER
PPK HOSPITAL
MARTHANDAM - 629 165

QUALITY HEALTH CARE WITHIN YOUR REACH

APPENDIX -III

ETHICAL COMMITTEE CLEARANCE LETTER

Tel. (O) : 273297
270753

GLOBAL COLLEGE OF NURSING

Recognised by the TNC & INC
Affliated to Tamil Nadu Dr. M.G.R. Medical University
Edaivilagam, Nattalam, Kanyakumari District.

Off: S.G. Multi Speciality Hospital, Old Theatre Jn, Pammam, Marthandam - 629 165,
K.K. Dist., Tamil Nadu. Mob : 9443606955, 9944110448.

GLOBAL COLLEGE OF NURSING
EDAVILAGAM, NATTALAM, KANYAKUMARI

ETHICAL CLEARANCE CERTIFICATE

Dear Mrs. Presila Reyona P. (Child Health Nursing)

Sub: Your letter dated 25/04/2016 for the approval of above reference study and its related documents.

Ref: **"A study to assess the effectiveness of ice cube on a specific Acupoint to reduce pain before Intramuscular injection among the children at selected hospital in Kanayakumari District"** The Ethics committee of Global College of Nursing, Edavilagam, Nattalam, Marthandam, Reviewed and discussed the study proposal the documents submitted by you related to the content of the above referenced study and its meeting held on 04/05/2016.

The following Ethical committee members were present at the meeting held on 04/05/2016.

S.No.	Name	Profession	Position in the committee
1.	Prof. Josephine Ginigo	Nursing	Chair Person
2.	Dr. Sam.G.Jeba Joselin	Medical	Basic Medical Scientist
3.	Mrs. Vijila Berlin	Nursing	Clinician
4.	Adv. Sreenivasan	Legal	Legal Exports
5.	Prof. A. J. Benzam	Social	Social Scientist
6.	Dr. Ahilan	Management	Philosopher
7.	Mr. Sujin	Lay person	Community Person

After due Ethical and scientific consideration, the ethics committee has approved the above presentation submitted by you.

With Regards

Prof. Josephine Ginigo.,
Ethical Committee Chair Person
Global College of Nursing,
Edavilagam, Nattalam

Date: 05/05/2016
Place: Nattalam

GLOBAL COLLEGE OF NURSING * NATTALAM, K.K. DIST - 629 ...

APPENDIX -IV

CERTIFICATE FOR CONTENT VALIDITY

TO WHOMSOEVER IT MAY CONCERN

This is to certify that tools and content for the research study developed by Presila Reyona, II year M.Sc (Nursing) student of Global College of Nursing for her dissertation **"*A Study to Assess the Effectiveness of Ice Cube Application on a Specific Acupoint to Reduce Pain before Intramuscular Injection among the Children in Selected Hospital at Kanyakumari District*"** is validated.

Presila Reyona. P
II year M.Sc (N)

APPENDIX –V

CERTIFICATE OF ACUPRESSURE TRAINING

PARADISE YOGA AND NATUROPATHY HOSPITAL

Nanthavanam, Poonthoppu, Kannanoor P.O., K.K.Dist., TamilNadu., Pin : 629 158
Ph : 04651 - 276211, Cell : 9443462137
E-mail : drsugin@yahoo.co.in, info@drsuginparadise.com; Website : www.drsuginparadise.com

Ref.No : 0011/16 Date : 19-02-2016

Whomsoever may be concern

This is to certificate that **Presila Reyona. P** student of MSc Nursing from Global College of Nursing, Nattalam had completed a training course on "Acupressure Therapy" from ***8th Feb 2016*** to ***18th Feb 2016*** in our hospital.

As a preparation for her project ***"A Study to Assess the Effectiveness of Ice Cube Application on a Specific Acupoint to Reduce Pain before Intramuscular Injection among the Children in Selected Hospital at Kanyakumari District"***, she has finished her course and very well acquitted with the specific Acupoint related to her study.

19/02/2016.

Dr. Sugin Herbert BNYS, MBA(HM), M Phil, Ph.D(Psy)

Medical Director

PARADISE YOGA AND NATUROPATHY HOSPITAL
Nanthavanam, Poonthoppu, Kannanoor P.O.,
Kanyakumari Dt. - 629 158

APPENDIX -VI

RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am a M.Sc. (N) student of Global College of Nursing, Kanyakumari. As a part of my study, a research on **"*A Study to Assess the Effectiveness of Ice Cube Application on a Specific Acupoint to Reduce Pain before Intramuscular Injection among the Children in Selected Hospital at Kanyakumari District*"** is selected to be conducted. The findings of the study will be helpful for improvement of pain among children during intramuscular injection.

I hereby seek your consent and co-operation to participate in the study. Please be frank & honest in your responses. The information collected will be kept confidential and anonymity will be obtained.

Signature of the Investigator

I……..….hereby consent to participate in the study.

Place:

Date: **Signature of Participant**

Muha;r;rp gq;F ngWNthUf;fhd xg;Gjy; gbtk;

md;gpw;Fhpa gq;F ngWNthNu!

gphprpyh hpNahdh vDk; ehd; fpNyhgy; nrtpypah; fy;Y}hpapd; ,uz;lhk; Mz;L gbg;gpd; xU gFjpahf Foe;ijfSf;F jir Crpapd; NghJ typ czh;T kPJ gdpf;fl;b gad;ghL gw;wp Xh; Ma;T nra;a cs;Nsd;. ,t;tha;T rpWth; Nehit Fiwf;f nghpJk; gad;gLk;.

,t;tha;tpy; jhq;fs; fye;J nfhz;L jq;fspd; gjpy;fis cz;ikahfTk; ntspg;gilahfTk; $WkhW jq;fis gzpTld; Nfl;Lf;nfhs;fpNwd;. jq;fs; gjpy;fs; ,ufrpakhf ghJfhf;fg;gLnkd cWjpaspf;fpNwd;.

Ma;thshpd; ifnahg;gk;

…… vDk; ehd; ,t;tha;tpy; fye;Jnfhs;s rk;kjpf;fpNwd;.

,lk;:

Njjp: gq;FngWNthhpd;

ifnahg;gk;

APPENDIX –VII
DEMOGRAPHIC VARIABLE PROFORMA

Purpose

This proforma is used by the researcher to collect information on the demographic variables of children such as age, gender, siblings, religion, area of residence and education of the care taker. The information collected will be kept confidential.

Instructions

The researcher will collect the information by interviewing the care taker.

Sample number:

1. **Age of the child**

   1.1 <4.0 years ☐

   1.2 4.0 – 5.0 years ☐

   1.3 5.1 - 6.0 years ☐

   1.4 6.1 – 7.0 years ☐

2. **Gender of the child**

   2.1 Male ☐

   2.2 Female ☐

3. **Number of Siblings**

   3.1 None ☐

3.2 One ☐

3.3 Two or More ☐

4. Care Taker

4.1 Parent ☐

4.2 Gradparent ☐

4.3 Other ☐

5. Area of residence

5.1 Urban ☐

5.2 Suburban ☐

5.3 Rural ☐

6. Education of the Care Taker

6.1 Uneducated ☐

6.2 Higher Secondary ☐

6.3 Degree/ Diploma ☐

6.4 Post Graduate ☐

rKf kw;Wk; FLk;g tptuq;fspd; khjphpg; gbtk;

Nehf;fk;

,e;j khjphpg;gbtk; Foe;ijapd; khWgl;lf; Fwpg;Gfshf taJ> ghy;> cld;g;gpwg;G> nghUg;ngLg;Nghh;> ,Ug;gplk;> nghUg;ngLg;Nghhpd;; fy;tp Nghd;w khW gl;lf; Fwpg;Gfis mwpa Ma;thsh; gad;gLj;JtJ.

mwpTiu

jhaplk; Neu;f;fhzy; %yk; Ma;thsh; jfty;fisr; Nrfhpg;ghh;.

khjphp vz;:

1. **Foe;ijapd; taJ**
   - 1.1 4 tajpw;f;F fPo; ☐
   - 1.2 4.1 Kjy; 5 taJ tiu ☐
   - 1.3 5.1 Kjy; 6 taJ tiu ☐
   - 1.4 6.1 Kjy; 7 taJ tiu ☐
2. **Foe;ijapd; taJ**
   - 2.1 Md; ☐
   - 2.2 ngz; ☐
3. **cld;g;gpwg;G**
   - 3.1 ,y;iy ☐
   - 3.2 xUth; ☐
   - 3.3 ,uz;Lf;F Nkw;gl;Nlhh; ☐

4. nghUg;ngLg;Nghh;

4.1 ngw;Nwhh; ☐

4.2 jhj;jh> ghl;b ☐

4.3 kw;Nwhh; ☐

5. ,Ug;gplk;

5.1 efuk; ☐

5.2 efhpak; ☐

5.3 fpuhkk; ☐

6. nghUg;ngLg;Nghhpd; fy;tp mwpT

6.1 fy;tpaw;Nwh; ☐

6.2 Nky; epiy gs;sp ☐

6.3 fy;Y}hp gl;ljhhp ☐

6.4 KJfiy gl;ljhhp ☐

APPENDIX - VIII
PAIN ASSESSMENT SCALE
FACE LEG ACTIVITY CRY CONSOLABILITY (FLACC) PAIN SCALE

Purpose

This scale is used to measure the level of pain of children during intra muscular injection as scored by researcher.

Instructions

The researcher scores the pain by observing the child during intra muscular injection and place a (X) mark in appropriate column.

Criteria		Score
Face	0- No Particular expression or smile 1- Occasional grimace or frown, disinterested 2- Constant quivering chin, clenched jaw	
Legs	0- Normal position or relaxed 1- Uneasy, restless, tense 2- Kicking or legs drawn up	
Activity	0- Lying quietly, normal position, moves easily 1- Squirming, shifting back and forth	

	2- Arched, rigid or jerky	
Cry	0- No cry 1- Moons or whimpers 2- Crying steadily	
Consolability	0- Relaxed 1- Reassured by occasional touching, hugging 2- Difficulty to console or comfort	

SCORE INTERPRETATION

0 : No Pain

1-3 : Mild Pain

4-6 : Moderate Pain

7-10 : Severe Pain

APPENDIX -IX
MANUAL FOR ICE CUBE APPLICATION OVER ACUPOINT(LI-4)

Definition

Ice cube application is the ice applied to the acupressure point and meridian. It is characterized by pressing and rubbing on the meridian, acupoint, muscles and the skin areas by pushing and stroking the meridians, kneading and grasping muscles and rubbing the skin.

Indication

- Pain reduction during injection

Contraction

Ice cube application should not be given

- In an area of infection
- Over red, broken or swollen skin

- Over major blood vessels

Mechanism of Action

Application of ice which stimulates the large diameter sensory fibers that synapse in the dorsal horn of the spinal cord which procedures an inhibitory effect on the transmission of incoming pain signal, from smaller diameter sensory fibers stimulated by needle puncture, causes fewer pain signal to reach the brain and reducing perception on it.

Location

Large Intensine 4 (LI-4) or hegu is the point between the first and second metacarpal bone (bone of the thumb and first finger). It lies at the highest point formed when the thumb is brought to rest against the base of middle finger.

Step for Ice Cube Application

- Tools needed are crushed ice, small terry wash cloth.
- Crushed ice to be kept in ice box.

- One third of the crushed ice is taken and placed in the center of the terry wash cloth.
- Four corners of the wash cloth are lifted to the center and twisted to make a small ice bag.
- The child is positioned comfortably on a chair or on the care taker's lap.
- The ice cube is applied for a period of 30 seconds prior to intra muscular injection.
- The ice cube application is repeated in both hands.

APPENDIX -X

PHOTOGRAPHY